



HELIDECK MANUAL



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Changes in this edition:

- 2.13 helideck Report.
max. period of validity, extended text
- 3.1.12 Marking of closed helideck.
new
- 5.6 Specific weight measuring.
New second last sentence; If an electronic.....
- 6.5 Flights to installations that are normally unmanned.
reworked
- Enclosure B.
New layout, adjusted zone at cargo bays
- Enclosure F5.
removed S-76, new AW139
- Enclosure I.
change cloudbase from helideck to sea level
- Enclosure F1
new info cargobay EC225
- Enclosure M Helideck Report.
Renamed to Helideck Report "NORWEGIAN OIL AND GAS ver1" and attached as separate writable PDF form. Updated content.

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 - C helifuel forms**
 - D phraseology**
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 - F1 SuperPuma AS332 & EC225**
 - F2 CHC-HS Sikorsky S-92**
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 - H helicopter shut down**
 - I guidance to radio communications**
 - J offshore refuelling systems**
 - K hot refuelling**
 - L standard helideck monitoring systems**
 - M reporting form ground occurrences**
- Helideck report form. See separate PDF attachment!**

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1 General

This manual describes procedures and guidelines for personnel working on helicopter decks (helideck crew) on petroleum installations on the continental shelf.

The manual is the document to which the helideck crew shall relate unless the situation requires an exemption for safety reasons.

The manual has been developed as a joint project between Norwegian Oil and Gas and the helicopter operating companies CHC Helikopterservice A/S and Bristow Norway A/S.

Chapters 1 – 6 describe common procedures and guidelines based on requirements from the authorities and accepted industrial standards.

Chapter 7 covers specific requirements relating to installations and companies.

1.1 Purpose and scope

The purpose of the manual is to describe the areas of responsibility on the helideck, requirements to the helideck crew and their equipment, and to determine how activities and tasks are managed and conducted so that operations on the helideck are executed in a safe and proper manner.

The manual is intended to contribute to the safe conduct of helicopter operations on the Norwegian shelf by ensuring uniform standards and behaviour.

1.2 Responsibilities

Norwegian Oil and Gas is the owner of this document and is responsible for either updating or revoking the document should organisational or operational conditions so require.

Norwegian Oil and Gas' Expert Group on Aviation matters, in cooperation with the helicopter operators on the Norwegian shelf, are to assume this responsibility.

1.3 Approval

The document has been approved by the Committee for Development and Operations, and has been verified by CHC Helikopterservice A/S and Bristow Norway A/S.

1.4 Distribution and Amendments

The document is included in Norwegian Oil and Gas set of regulations, and is available via Norwegian Oil and Gas' home page (<http://www.Norwegian Oil and Gas.no>).

The latest amendment dates will be published here.

Norwegian Oil and Gas' member companies will be notified in writing of any amendments.

The operating companies internal distribution lists are shown in Chapter 7.

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1.5 References

The following documents are relevant for the contents of this manual:

The Civil Aviation Authority: Regulations for Civil Aviation;

- BSL D 1 – 7 Regulations relating to the transport of cargo by civil aircraft (<http://www.lovdata.no/cgi-wift/ldles?doc=/sf/sf/sf-20030111-0041.html>)
- BSL D 5 – 1 (Regulations pertaining to aviation on the continental shelf) (<http://www.lovdata.no/cgi-wift/ldles?doc=/sf/sf/sf-20071026-1181.html>)
- BSL A 1-3(forskrift om varslingsplikt ifm. luftfart. (<http://www.lovdata.no/cgi-wift/ldles?doc=/sf/sf/sf-20061208-1393.html>)

The Maritime Directorate

- Regulations of 22 December 1993 no. 1240 relating to helicopter decks on mobile installations. (<http://www.lovdata.no/cgi-wift/ldles?doc=/sf/sf/sf-20080115-0072.html>)

The Petroleum Safety Authority Norway ; the Facility Regulation §70, including the guidelines to the regulations.

ICAO – TI Restricted Articles List.

Joint Aviation Authorities (JAA), Joint Aviation Requirements - JAR OPS 3, Commercial Air transportation (Helicopters).

Norwegian Oil and Gas Guideline 074 - Recommended guidelines for helideck crew, chapter 9: Helideck crew and competence.

1.6 Definitions

- **luggage free cabin**, passengers are not allowed to carry hand luggage with them onboard the helicopter, exemptions are reading matters/magazines/newspapers.
- **anti collision lights**, powerful rotating lights above and below the helicopter fuselage.
- **fire guard**, operates the fire fighting equipment on the helideck and assists the heliguard with the loading and unloading of passengers and cargo from the helicopter.
- **drainage samples (fuel)**, samples taken from the lowest point of the tank or from the filter housing.
- **specific weight measuring (of Jet A – 1)**, measuring the specific weight (density) of the fuel. To be conducted when receiving fuel offshore. The specific weight is checked by using a hydrometer and a thermometer.
- **free approach and departure sector**, within the 210 degree approach and departure sector there must be no obstacles, neither on nor in the immediate vicinity, that reach above the level of the helideck.
- **filling nozzle**, arrangement on the refuelling hose at the end nearest to the helicopter, used for gravity refuelling of the helicopter.
- **helideck crew**, consists of a minimum of three persons, HLO, heliguard and fireguard.
- **HFIS**. Helicopter Flight Information Service.
- **heliguard**, responsible for the embarkation and disembarkation of passengers and cargo, and assisting the fireguard and the HLO in emergency situations.
- **HLO (helicopter landing officer)** supervises the heliguard and the fireguard.

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- **winching area**, a pre-defined area which, in situations where the helideck is closed, is suitable for winching patients and personnel up to a rescue helicopter.
- **chocks/wheel chocks**, blocks which are placed in front of and behind the wheels on both sides of the helicopter.
- **cabin cargo**, as a general rule, when transporting passengers, cargo shall not be transported in the helicopter's cabin. Exemptions may be made for priority cargo.
- **manifest**, an official document stating the names of the passengers, their employers, the weight of the passengers and their luggage, the weight of the cargo and the destination.
- **night conditions**, when the sun is more than 6 degrees below the horizon.
- **Jet A – 1**, jet turbine fuel used by aircraft.
- **clear and bright (Jet A – 1)**, the expression is independent of the fuel's natural colouring. Clear states that no sediments or emulsions are present. Shiny refers to the clear shiny look of completely clean fuel.
- **earthing point**, point on the helicopter for attaching the anti static wire. The helicopter, the supply cabinet, refuelling and pressure refuelling connectors must all be wired to electrical conductors during refuelling to eliminate any differences in current between the units.
- **particles (in fuel)**, consist mainly of small pieces of rust, sand, dust or deposits from hoses and equipment.
- **rotor disc**, the area covered by the main rotor.
- **Shell water detector test**, the "Shell Water Detector" has been developed for those borderline cases where the human eye cannot be trusted. The test is a positive indication of finely divided water at concentrations of 30 parts per million or lower (30 ppm) The detector consists of an unbreakable 5 ml syringe and a plastic detection capsule containing water sensitive paper.
- **safety zone** (for helideck crews during landing, take off, shutting down and starting up the helicopter), by the stairways to/from the helideck (not on installations not having stairways).
- **safety zone** (for embarking and disembarking passengers), all movement of personnel shall primarily take place at a 90 degree angle from the main axis of the helicopter and thereafter outside the rotor disc. Passengers waiting to embark shall follow the instructions given by the crew of the helideck (in an area where there is a low risk of injury should there be a helicopter accident on the helideck).
- **safe rotor zone**, an area where there is no risk of contact with either the main rotor (low), or the tail rotor.
- **safe zone with eye contact with the pilot**, an area in the vicinity of the nose of the helicopter, limited to the rear by eye contact with the pilot and taking into consideration a full view of the helideck, and where there is no risk of contact with the main rotor.
- **end of hose sample**, sample taken from the end of the delivery hose through the filling nozzle.
- **satisfactory result (fuel sample)**, the fuel has the correct colour, is visually clear and transparent, free from particles and dissolved water at normal temperatures.
- **pressure fuel connector**, arrangement at the end of the filling hose nearest to the helicopter.
- **Fire protective clothing**, clothing used to protect response crews from heat and other stresses during fire/smoke diving situations. Exempted from this definition is the protection of head, hands and feet that is regulated through separate NS-EN standards.

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2 Responsibilities, requirements and operational regulations

The authorities place minimum requirements regarding helicopter decks, equipment and personnel. These may be found in BSL D 5 – 1. Some extracts from the BSL are quoted here.

2.1 Responsibility

The operator of an installation is responsible for ensuring that the installation's helideck, refuelling plant and competence meet current requirements.

2.2 Approval of mobile and fixed installations

Prior to initial use on the Norwegian Continental Shelf, an installation's helideck and refuelling plant must be approved by relevant authorities and the helicopter company(s) operating on the installation. For permanent installations the relevant authorities are The Petroleum Safety Authority Norway and the Norwegian Civil Aviation Authority.

For mobile installations the relevant authorities are the flag state, alternatively the Norwegian Maritime Directorate, assisted by the Norwegian Civil Aviation Authority. Reference is made to chapter 3.

2.3 Inspection

The operator of an installation is responsible for routine inspections of the helideck and refuelling plant.

2.4 Supervision

The operating company is responsible for supervision relating to helicopter activities on the installation such as the helideck, the refuelling plant, the helideck crew, the radio operator/person responsible for communications, radio and navigational equipment etc. Such supervision is in addition to the installation's routine for maintenance and inspection.

2.5 Maintenance programme

A maintenance programme for the helideck, its' equipment and refuelling plant (if installed) is to be established and maintained.

2.6 Audits

The helicopter company and the The Petroleum Safety Authority Norway, with professional support from the Civil Aviation Authorities will carry out periodical audits on the operator's systems/installation.

2.7 Training of helideck crews

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Basic and refresher training for helideck crew is to be carried out in accordance with the Norwegian Oil and Gas' curriculum. The courses are titled HLO Basic Course and HLO Refresher Course.

The HLO Refresher Course must be taken within 24 months after the last HLO Basic/Refresher course.

Refresher training on the installation should be carried out at least every 14 days for all helideck crews. During this training special emphasis should be placed on fire and damage control. See Enclosure E. for examples of such a training programme.

All basic and refresher training must be documented!

2.8 Experience

Helicopter deck crew members who have only recently completed their basic training shall participate in a minimum of 20 helicopter landings and take offs under the guidance of an experienced HLO before being fully qualified to stand independent duty and becoming part of the minimum manning of the helicopter deck. Such training should be conducted on an installation with heavy helicopter traffic. Reference is made to " Norwegian Oil and Gas guidelines #074 para.9, Helidekkbemanning og kompetanse" (Norwegian only).

Personnel who have completed their training in accordance with item 2.7, but who have not acted in that position during the past two years, shall have a thorough introduction to the helideck and refuelling plant in question under the guidance of the HLO.

Personnel who have not acted in a position on the helideck during the past four years must retake the basic HLO training course.

Personnel who are to act as HLO should have held a regular position as heliguard and/or fireguard for a minimum of one year before being allowed to fill the position as HLO. The installation should furthermore facilitate education and training for the new tasks he/she will face as HLO.

2.9 Physical fitness

Helideck crews must meet the same physical fitness requirements as those applicable to response personnel participating in search and rescue teams. This includes documented knowledge in the use of smoke diving apparatus.

2.10 Special responsibilities and duties for the leader of the helicopter deck (HLO)

It is the duty of the HLO to supervise and run day to day operations on the helideck during helicopter visits, including updating the installation manager in writing at regular intervals regarding the status of the helideck, equipment and services. He shall i.a. ensure that:

- necessary steps are taken to deny unauthorised persons access to the helicopter deck prior to take off and landing.
- the deck is cleared of loose objects, snow and ice, inflammable substances etc.
- necessary personnel are present and at a state of readiness.
- the helideck crew has been briefed on any special conditions prior to the arrival of the helicopter, specially on the arrival of unfamiliar types of helicopter or in the event of special operations.

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- all equipment and instruments are in place and in full working order.
- all crane operations in the vicinity of the landing area have been stopped and the cranes are correctly positioned in relationship to the free approach and departure sectors.
- passengers are held in the safe zone during landing/take off and that they are given guidance during disembarkation and embarkation.
- passengers are wearing on their survival suits in a proper manner.
- passengers have fastened their safety belts.

Before landing the HLO shall maintain contact with the helicopter pilot and inform whether the deck is clear for landing.

The HLO shall immediately report any form of deviation on the helicopter deck to his immediate superior/installation manager, so that the helicopter operator may be informed of the situation.

The HLO shall be positioned to be able to observe as best as possible, and closely monitor, landing and take off. The HLO shall immediately inform the pilot via radio or visually if any abnormal situation occurs. The threshold using the radio should be low and with no demands regarding phraseology or language. Warning should though preferably be given in English if this can be achieved without time loss.

2.11 Clothing and protective equipment for the helideck crew

All persons who are part of the helideck crew during take off and landing shall each have immediate access to one set of equipment consisting of:

Norwegian Standard/European Norm:

NS-EN 469	Protective clothing for fire fighting
NS-EN 659	Protective gloves for fire fighting
NS-EN 443	Helmets for fire fighting
EN 15090	Boots for firemen (alternative old standard NS-EN 345-2 Safety shoes for occupational use)
EN 533	Balaclava helmet
EN 137	Smoke diving equipment (a minimum of two (2) sets for distribution)

When the equipment is not in use it shall be stored in a separate locker, ready for rapid donning, in the immediate vicinity of the helideck. The locker must be painted red and marked:

“Brannbeskyttelse” and “Fire Protection”.

In addition to the required numbers/sets of fire protection equipment, the locker must also contain:

- two lifelines with a minimum length of 30 m
- fire inhibiting blankets

The member of the helideck crew who is stationed at the foam cannon shall wear all the fire protection gear described above, apart from the smoke diving equipment.

During take-off and landing, when there is reason to believe that a hazardous situation may arise on the helideck, all persons who make up the helideck crew must wear fire protection gear.

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Coverall used for work on the helideck must meet the requirements for fire safety according to **EN 531**.

The HLO shall clearly be marked front and back with the letters HLO, or by an armband, so as to be easily identifiable by the helicopter crew.

2.12 Manning the helicopter deck

The helicopter deck shall be manned by minimum three persons:

- **HLO (In charge of the helicopter deck)**
- **Heliguard**
- **Fireguard**

These are nominated as the Helideck Crew.

They must be able to document that they have completed their familiarization in the use of the helicopter deck's fire fighting equipment, including the training stipulated in Chapter 2.7.

During take off and landing at least one person, dressed in fire protection clothing as stated in Chapter 2.11, shall be stationed at the remote control unit for the helideck's foam cannon or at the most practical foam cannon to be used in the prevailing weather conditions.

During refuelling with the engine running the helideck crew shall consist of (Refer also to Chapter 5.12.6 and enclosure K):

- **The operator of the refuelling plant**
- **The operator of the pistol grip nozzle**
- **The fireguard**

The HLO may be one of the three persons. The fireguard shall be dressed as described for take off and landing.

When required additional personnel without training and/or experience could be utilised on the helideck. Such personnel must be briefed by the HLO and be under constant supervision during helicopter operations.

2.13 Helideck report

- Not later than one hour before planned helicopter departure from base the offshore installation shall give the helicopter operator updated information regarding the status of the helideck and flying conditions.
- The information shall be given on a separate form, see separate PDF enclosure: Helideck Report Form Norwegian Oil and Gas v1.(See separate enclosure to the manual by choosing "attachements" in upper left corner)
- The report is valid maximum 6 hours on condition there are no changes in the information.
- The helideck report shall be forwarded in pdf. format as attachment to an E-mail. The **subject** field in the E-mail shall be filled in as follows:
<Name of Installation, "Helideck Report" Date, Flight number>
Example:

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"Troll A, Helideck Report 13.08.10"
or "Asgard B, Helideck Report 13.08.10, HKS477"

Send the completed form via E-mail to the relevant helicopter operator:

- **Bristow Norway:** helideck.norway@bristowgroup.com
- **CHC Helikopter Service:** helideck@chc.ca

NB! These e-mail addresses are for receiving helideck reports only and will not be monitored for other requests.

2.13.1 Filling in the form

The form is self-explanatory, but rolling the pointer above a writable field then additional information will show up. Items that need further explanations are detailed in the below paragraphs.

Dynamic positioning

Cross "YES" or "NO" to indicate if the vessel is positioned dynamically (DP).

If DP system is active: "YES".

If inactive, moored, anchored, free floating with or without steering speed or fixed installation: "NO".

Accurate monitoring equipment (HMS system):

If a moving helideck (ie. not a fixed platform) and HMS system operative: Cross "YES".

If no operational HMS system or fixed platform: Cross "NO".

Log info

Logistics data have to be filled in if this information are not reported separately in accordance with local arrangement.

Return load may not be available when this form is forwarded to the helicopter operator. However, if the information is available or even only partially available (i.e. number of passengers) it can be useful to the pilots for fuel planning purposes etc. The pilots will confirm information in this section upon arrival.

In case of multiple landings the ROUTING fields can be used to indicate routing including exchange of passengers. i.e.: 1: XXA -8 /+9, 2: XXB -9 /+11.

NOTE: An information update of relevant weather, movements and log info (i.e. return load) for the installation shall be submitted to the arriving helicopter upon initial radio contact. (See also enclosure I Radio-communications)

Helideck nonconformities

Any helideck nonconformities shall always be filled into the form.

Examples: ships within the 500 meter zone, non-conformities of helideck equipment, temporary objects close to the obstruction free zones, deviation from standard helideck procedures, flaring of gas, other info which may be useful to the pilots.

Weather observation

All weather information shall be filled into the form, but some exceptions as per local procedures:

If the installation is covered by HFIS services the "QNH" and the "cloudbase" field might be

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omitted.

If the installation is covered by local METAR services the "cloudbase" field might be omitted writing "see metar" in the field.

Wind

Wind direction shall be stated in degrees relative to magnetic North and Wind velocity (speed) in knots.

Other relevant weather info:

Fill in additional relevant weather information that is not presented elsewhere in this section. I.e. fog banks, variable winds, resent rain-/snow showers, thunderstorm activity, lightning, variable visibility in different directions etc.

Sea spray observed over the helideck

Check Yes or No if there has been / has not been observed/reported sea spray over the helideck. This can be difficult to determine, but in regard to incidents of sea spray causing engine flame out. The helicopter operator does require observed/reported sea spray to be reported.

HELIDECK MOVEMENT

Max pitch UP/DOWN with reference to horizon:

The largest pitch movement up/down over the last 20 minutes measured in degrees with reference to the horizon.

Max roll Starboard/Port with reference to horizon:

The largest roll movement starboard/port, over the last 20 minutes, measured in degrees with reference to the horizon.

Max Helideck Inclination:

The largest measured helideck inclination, over the last 20 minutes, measured in degrees with reference to the horizon.

Max heave (top to bottom):

The maximum heave (total vertical movement) of the helideck is the maximum top to bottom value in one cycle (one movement curve) over the past 20 minutes.

Heave period:

The time in seconds between tops of two waves. If measurement equipment is not available the pilots will use a standard heave period of 10 seconds for manual calculations of **average heave rate**.

Max Heave rate (expression for Max Average Heave rate):

Shall be entered if measurement equipment for this purpose is available. Heave rate shall be reported as the highest value (average heave rate meaning average speed from top to bottom or bottom to top of a wave) measured over the last 20 minutes. If measurement equipment in not available, the column should not be filled in. The pilots will calculate **average heave rate** manually by dividing maximum total heave (measured over the last 10 min.) by half the motion period (**heave period**).

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HELIDECK REPORT						Installation:
Date:	Time (UTC):		Position:			
Dynamic positioning:	Yes	No	NDB:	kHz		
Accurate monitoring equipment:	Yes	No	VHF:	mHz		
LOG INFO						
Flight number:	Helifuel available:		Yes	No	Fuel quantity:	Litres
Return load:	Passengers			Luggage (incl. In total):		kg
Total weight:	kg			Cargo (incl. In total):		kg
Routing:	1	2	3	4		
The helideck is inspected according to OLF helideck manual. Nonconformities will appear under Remarks.						
Remarks:						
NAME OF HLO						

WEATHER OBSERVATION					
WIND	Height:	Distance:	Direction:	Velocity:	Gust (2 min):
Helideck:	M	M		kn	kn
Area (derrick):	M	M		kn	kn
Visibility:	M	QNH:	hPa	Helideck heading:	Vessel heading:
Temperature:	Degrees C	Dewpoint:	Clouds (few / sct / bcn / ovc in feet):		
Other relevant weather info/fog banks, rapid changes, etc.:					
Sea spray observed over helideck: Yes No					

HELIDECK MOVEMENT 20 MIN. INTERVAL				INSTALLATION CATEGORY:
MAX PITCH AND ROLL IN DEG. WITH REF. TO HORIZON				Max heave (top to bottom): M
Pitch up	Pitch down	Roll port	Roll starboard	Heave Period (if available): Sec.
Max Helideck Inclination:				Max heave rate (if available): m/s

OLF ver.1

2.14 Helideck Monitoring Systems

Unstable Helidecks

The helicopter Companies and CAA-N have set requirements to all installations and vessels with unstable helidecks that a system which can measure Pitch, Roll, Helideck Inclination and Heave Rate must be installed.

Definition

The definition of an unstable helideck is in this context a helideck mounted on ships, floating production units, semi submersible rigs, jack up rigs when they are floating/moving and other helidecks that are moving. These are all defined as unstable if pitch and roll movements exceeds 1 degree to either side from the horizontal plane, and if the vertical movement of the helideck exceeds 2 meters.

Measuring equipment for unstable helidecks (Helideck Monitoring System)

The Helicopter Companies have developed a Standard that covers this requirement. This standard represents the minimum requirements to measuring equipment for operations to an unstable helideck.

See enclosure L: Standard Helideck Monitoring Systems.

2.15 Reporting of incidents

Reporting of ground incidents on the helideck

In accordance with CAA-N's new reporting requirements all relevant incidents on the helideck shall be reported to the CAA-N within 72 hours.

The form attached to Norwegian Oil and Gas Helideck Manual (enclosure M) describes types of reportable incidents, and shall be used in addition to any internal reporting procedures.

The report shall be filled out as soon as possible and sent to the Operations Centre of the Helicopter Company involved in the incident. They will enter the report into their reporting system and forward the report to CAA-N.

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3 Helicopter deck and equipment parts

The contents of this section are of an informative nature and describe:

- The helicopter deck in general
- Equipment parts and guidelines on helicopter safety and their relationship to rules and regulations.

The authorities place minimum requirements on helidecks, equipment and personnel. These are to be found in BSL D 5-1. The following items are mainly extracts of the most important regulations in this BSL.

3.1 The helicopter deck in general

3.1.1 Obstacles in the approach and departure sectors

In the 210° approach and departure sectors and in the immediate vicinity of the deck there shall be no obstacle that rises above the level of the helideck. Exempted are:

- The safety perimeter.
- Perimeter lights and floodlights no higher than 25 cm above the level of the helideck.
- The outer edges of the safety net.
- Individual obstacles required for operating the helicopter deck (railings, stairs, foam cannon, perimeter lights) that do not rise more than 25 cm above the level of the helideck.

3.1.2 Friction

The surface of the helideck shall be treated with a material that prevents the helicopter from sliding (non-skid).

With the rope net in place the helicopter deck shall have a friction coefficient of at least 0.40 or higher, also when the deck is damp or wet.

Without the rope net the friction coefficient shall be at least 0.65 (see item 3.1.3 below).

3.1.3 Rope net

The helicopter deck shall be fitted with a rope net.

The size of the net is determined by the size of the largest helicopter that is used.

Such a net is normally dimensioned for a large helicopter, the minimum size being 15 x 15 metres.

The meshes in the net shall be so dimensioned that they do not snag the helicopter's undercarriage.

The rope net must be fastened every 1.5 metre. To ensure that the rope net is kept sufficiently taut, at least 50% of the fastening points shall be fitted with tightening mechanisms. The net shall be so taut that it cannot be lifted more than maximum 25 cm clear of the surface.

A rope net is not required on installations where the surface of the helicopter deck consists of single profiles with special friction arrangements ("safe-deck").

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The requirement for rope netting on non-movable helidecks may be deviated from, provided that the deck is suitably constructed and there is a system in place to ensure that the helicopter can not skid, and that the friction coefficient is at least 0.65. The requirement for rope netting can not be deviated from if there is snow or ice on the helideck.

3.1.4 Visual aids

The term visual aids means windsock, markings and illumination of the helideck.

3.1.5 Windsock

The windsock must be:

- Easily visible
- Mounted in an area minimally affected by turbulence from surrounding constructions.
- Single coloured (orange) or dual coloured orange/white, red/white or black/white, conically formed and of sufficient size. (Standard size: inner diam. 60 cm, outer diam. 30 cm, length 2.4 m)
- Illuminated during night flying.

3.1.6 Identification

The helicopter deck shall be marked with the name of the installation clearly visible from all approach directions above the level of the helicopter deck.

3.1.7 Lighting

Helicopter decks that are to be used for night flying and/or in conditions with reduced visibility must:

Have a satisfactory shielded floodlighting arrangement so that the pilots cannot be dazzled during the approach and landing phase. The floodlights are to be used at the request of the pilot.

Be marked with perimeter lighting consisting of green lamps equally spaced at a interval of not more than 3 metres

The perimeter lighting must not reach more than 25 cm above the level of the helideck.

The floodlighting and the perimeter lighting must be connected to the installations/plants emergency power supply and switchover time must, in the event of a failure of the main power supply, be no more than 10 seconds.

The highest point of the derrick, crane booms and cabins or any other obstacle that represents a hazard to flying must be marked with red warning lights and be visible from all positions. The derrick and crane booms must also be fitted with red lights at levels for every third of the overall length calculated from the highest point of the derrick/crane boom.

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At least one light at each level must be visible from all directions.

3.1.8 Operational equipment

The helicopter deck shall at all times maintain all the equipment that is required for operations, such as:

- Wheel chocks
- Ropes for tying down a parked helicopter
- Scales for weighing luggage/cargo (should be available on the installation)
- Equipment for removing snow and ice.

3.1.9 Rescue equipment

The following rescue equipment should be found in the immediate vicinity of the helicopter deck:

- 2 Fire axes
- 3 Non corrosive knives (for cutting seat belts).
- 2 Flashlights (Explosion proof)
- 1 Crowbar
- 1 Wire cutter
- 1 Hacksaw w/spare blades
- 1 Hammer
- 1 Cutting chisel
- 1 Sheet metal shears
- 1 Bolt cutter
- 1 Jack for minimum lift of ½ tonne

The equipment must be stored so that it is readily available, visible and in a safe place, preferably in a sealed locker or container. If the locker or container can be locked with a key, the key must be placed behind a window of breakable material. The locker or container shall be painted red and marked "Nødutstyr" and "Emergency Equipment".

One metal hook on a 3 m long metal handle, together with a light ladder of about 3 m in length, shall be stored in a suitable place near the locker or container holding the emergency equipment.

3.1.10 Communications equipment

Personnel who comprise the minimum manning requirement for the helicopter deck shall be equipped with portable two way VHF radios capable of communicating with the crew of the helicopter and the installation's radio room.

3.1.11 Signs

Access routes to the helicopter deck shall be marked with clearly visible signs prohibiting:

- Presence on the deck during start and landing

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- Movement of personnel on the helicopter deck behind a parked helicopter with the rotor engaged.
- Exits steps from the helicopter deck shall be clearly marked with “EXIT”.

The text shall be visible in the dark.

3.1.12 Marking of closed Helideck

A helicopter will normally not land before a “deck clear” message is received from the HLO, but in an emergency or by misunderstanding this can still happen. A helideck that is not marked as closed is therefore assumed safe to land on, without any threat to the helicopter or personnel on the ground. To ensure against this the helideck shall be marked as closed if a landing will give unacceptable consequences.

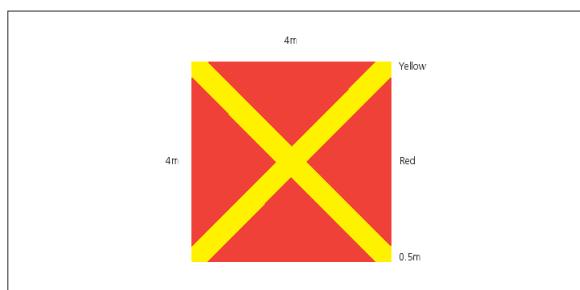
The Marking shall be used

- If the helideck is dangerous to land on, for example due to work in progress with loose objects, weakened structure, obstacles like wires stretched above the helideck ao. NB! Does not normally apply to crane operations because the crane structure will be visible to the pilots.
- If landing will represent a danger to personnel on or near the helideck.
- If another installation with helideck is close by or longside, ie a flotel, and only one of the helidecks is to be used.

NB! The marking shall not be used just because the helideck is not manned or due to general equipment failures.

A temporary or permanently closed helideck shall be marked in accordance with an internationally accepted standard with a yellow cross on red background. The marking should be painted on the deck or by using a painted canvas laid out and secured. The marking shall be placed over the "H" in the center of the helideck. When the helicopter deck is marked closed the green perimeter lights shall be turned off.

AMB / SAR helicopters will not land when the helideck is marked closed.



3.2 Safety equipment

This section describes in general terms the safety equipment available on the installations. The type of equipment may vary from installation to installation. Special information pertaining to a specific installation is included in the local operations manuals.

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3.2.1 Alarm systems

It must be possible to activate the alarm system from the helicopter deck or its' immediate vicinity.

The start button for the alarm system must be clearly marked.

3.2.2 Fire alarms and General alarms

Alarm buttons are located at the helicopter decks fire posts.

These are only to be used in emergency situations, including a fire in a helicopter or on the helicopter deck.

3.2.3 Alarm systems (Fire Alarm Boxes, FAB's)

Boxes for activating the fire pumps are located near the helicopter deck.

Throwing the switches in these boxes will start the fire pump(s) and indicate in the control room which fire alarm box has been activated.

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3.3 Fire fighting equipment

The authorities requirements relating to fire protection on the helicopter deck are to be found in the Civil Aviation Authority's, the Maritime Directorate's and the Petroleum Directorate's regulations, See Chapter 1.5

The Helicopter Landing Officer (HLO) shall ensure that the fire fighting equipment is always in good working order and ready for use.

Any deviation shall be reported to his/her immediate superior.

NOTE: The fire extinguishers system of the helideck must not be activated prior to helicopter landing. Activation before completed landing could lead to loss of deck references for the pilots.

3.3.1 Fire water system

A fire water system is compulsory.

3.3.1.1 Purpose and effect

By using water a fire may be controlled or extinguished in the following manner:

Water can act as a dilutor when converted to steam in the fire zone.

Steam reduces the oxygen content in the air current mixture by 1/3

Water absorbs heat when being converted to steam.

Water may be used for cooling surrounding areas so as to prevent the fire from spreading or to improve access to the area of the fire.

3.3.1.2 Application

Water is the best extinguishing agent for fires in woodwork/paper/garbage and is good for damping down fires following the use of hand held extinguishers.

3.3.1.3 Equipment

1.5" hoses are standard equipment for fire water/hosing down.

Foam equipment may alternatively be used with water only.

3.3.1.4 Use

Water used on an oil fire should be in the form of a fine spray.

Water must never be used on fires in electrical equipment before the power supply has been shut off.

Water must be used in the form of a fine spray for cooling.

For most fires the water jet must be directed at the root of the flames

3.3.2 Foam systems

3.3.2.1 Purpose and effect

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By using foam a fire may be controlled and/or extinguished in one or more of the following manners:

Foam acts as a "smothering agent".

If used in sufficient amounts it reduces the oxygen supply by preventing the influx of air.

Foam acts as a dilutor.

When forced into a fire zone foam is converted to steam and will, under certain conditions, reduce the air current mixture by 1/3.

The process of converting foam to steam will absorb heat.

A sufficiently thick layer of foam will protect explosive materials that are exposed to the fire by insulating and absorbing heat.

Fires involving inflammable liquids will be extinguished when covered by a thick carpet of foam. The carpet must have the proper consistency and thickness and must be maintained for a sufficient length of time.

3.3.2.2 Application

Foam must be applied in the largest possible amounts so as to cover the whole surface of the fire.

Foam is suitable for all kinds of fire, apart from electrical fires.

3.3.2.3 Equipment

There are three types of cannon and three types of hose reels.

Exceptions may be found on some of the older helicopter decks where there are only two cannon and two hose reels (only two fire posts).

Producing foam requires the mixing of the following three components in a turbulent condition:

- Water
- Air
- Foam concentrate.

This is usually achieved by injecting the concentrate under pressure into the water flow.

The system will usually start to produce foam about 20 seconds after the start up of the equipment.

3.3.2.4 Use

The fixed foam system is controlled from permanently installed fire fighting cabinets. After using the foam system all piping must be thoroughly flushed with water to remove any remaining foam solution.

Note that too much water will break down the foam.

3.3.3 Dry powder system

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3.3.3.1 Purpose and effect

The effect of the dry powder in very fine form:

The chain reaction of the fire is stopped by introducing into the atmosphere a large number of finely powdered particles.

Remember: When extinguishing a fire by using dry powder, any evaporation through the powder will present the possibility of re-ignition from hot metal, smouldering insulation etc.

3.3.3.2 Application

Dry powder is effective against most fires, especially electrical fires, as it is non-conductive.

When used to extinguish a petrochemical fire, in most cases re-ignition will occur unless the source of ignition is removed.

Foam must be used to prevent re-ignition.

3.3.3.3 Equipment

The equipment is of the gas cartridge propellant type.

The powder is propelled by internal overpressure.

Discharging a CO₂ propellant cartridge located inside the extinguisher creates this overpressure.

3.3.3.4 Use

The powder will normally start to flow within 15 seconds of activating the fixed equipment

The units should be directed towards the base of the flames. If possible, from upwind.

Immediately after use all piping must be cleaned of any remaining powder. This is to prevent powder /lumps that may later block the hose/piping.

3.3.4 Maintenance

All rescue and safety equipment shall be maintained in good working order and be ready for use at all times. Maintenance, periodical testing and inspection must be carried out in accordance with established procedures.

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4 Operations

This section of the manual describes operational limitations and the routine tasks of the helideck crew during helicopter operations.

The step-by-step duty of each individual member of the helideck crew during take off and landing is described in enclosure G, and for stop/start of rotors/engines in enclosure H.

Operations related to the fuel plant and refuelling are described in Chapter 5 “Fuel Control and Operations”.

Reference is also made to Chapter 6.4, “Refuelling in strong winds”.

4.1 Operating on the helicopter deck

4.1.1 The use of anti-collision lights as a signal to the helideck crew

After the helicopter has landed and is ready for unloading, the helicopters anti-collision lights will be switched off.

This indicates that the helideck crew have permission to approach the helicopter in order to carry out their tasks. See enclosure B Danger Zones.

Immediately before takeoff, or when the situation so requires, the pilot will switch on the anti-collision lights.

This indicates that the helideck crew must immediately vacate the helideck. The HLO will give the thumbs up signal when all personnel have left the helideck, and all objects have been removed there from.

4.1.2 Use of wheel chocks

This procedure applies to all helicopters with a wheeled undercarriage during operations on fixed installations, mobile rigs and vessels.

Standard hand signals must be used. (See Enclosure A)

Exempted from this procedure are helicopters in shuttle traffic where both pilots remain in the cockpit. Wheel chocks may then be used at the pilot's discretion.

4.1.3 Standard procedure

- The wheel chocks must immediately be put in place as soon as the anti-collision lights have been switched off.
- The wheel chocks must be placed in front of and behind both main wheels.
- Both pilots must remain in the cockpit until the wheel chocks are in place.
- The wheel chocks are removed when both pilots have taken their respective seats, and the pilot has signalled, “Remove wheel chocks”.

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4.2 Cargo in the helicopter

4.2.1 General

The restrictions described in this chapter apply to all types of helicopter.
The restrictions are supplementary to the authorities requirements (JAR OPS 3).

Personal luggage must not exceed 10 kg. per piece. Cargo that is sent by helicopter should not weigh more than 15 kg per parcel. Heavier packages must be divided if possible. Exemptions may be made for priority cargo. The cargo must then be specially labelled ("heavy cargo" with the weight listed on each package) and the installation/destination must be notified.

4.2.2 Passenger-/cargo manifest

Whenever passengers, luggage and/or cargo are transported by helicopter a passenger/cargo manifest must be completed and accompany the helicopter. When the passenger/cargo manifest has been completed it is considered to be an official document and therefore subject to inspection. The standard weight per passenger, including survival suit, is 211 lbs. (96 kg) for men and 174 lbs. (79 kg) for women. The weight of cargo/luggage comes in addition. The manifest shall contain the following information:

- The full name of the passenger
- Employer
- The weight of the passenger
- The weight of the luggage (per person)
- Weight of cargo/luggage
- Description of the content in each package
- Destination

When sending cargo from an installation to shore the HLO is responsible for checking the manifest and ensuring that it accompanies the transmittal. The HLO is responsible for checking that the number of passengers onboard complies with the passenger manifest, and that the manifest is handed to the helicopter crew. In loading the Super Puma the pilot shall be informed of the total load in cargo compartment 3.

4.2.3 Cargo and passengers together in the helicopter cabin

As a rule, when transporting passengers, cargo must not be placed in the helicopter cabin.

When exempted the following shall apply:

- Only prioritized cargo
- Cargo shall not be blocking the cabindoors
- Cargo must not block the main exits from that part of the helicopter cabin where the passengers are seated.
- Cargo must not be placed so that passengers do not have direct access to

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- alternative escape routes (push out windows). Passengers must not be placed in seats where the adjacent “push out window” is blocked, or in a seat where cargo hampers free access to the nearest such window.
- Cargo must not be placed in the centre aisle. Exempted are pipes with a diameter of up to 10 cm.
 - Cargo must not hamper access to emergency equipment.
 - Cargo must be secured in accordance with the authorities strictest requirements.
 - Cargo must primarily be placed in front of the passengers in the cabin.

4.2.4 Luggage free cabin

Passengers may not bring hand luggage with them into the helicopter cabin. All form of bags/ briefcases/ portfolios etc. are considered to be hand luggage and consequently prohibited. Reading matter/magazines/newspapers are exempted.

4.2.5 Transporting cargo in passenger seats

If cargo is to be placed in a passenger seat the following restrictions will apply:

- Max. one package per seat with a maximum weight of 80 kg (NB! Single packages weighing up to 15 kg may be transported accumulatively in a sack with a total weight of no more than 80 kg.)
- The sack's exterior measurements must be less than the height and width of the seat.
- In addition to the seat belt, the cargo must always be secured by a strap, cargo net or other approved means.
- Cargo must not be placed in seats adjacent to the main emergency exits of the helicopter.

4.2.6 Transportation of passengers and cargo

Transportation of passengers and cargo in helicopters requires, according to JAR-OPS 3.1220 (c), that the personnel involved in the operation has the necessary awareness training in dangerous goods. This is to enable the personnel to recognize dangerous goods in passenger luggage and also to identify/ recognize unmarked cargo that could be Dangerous Goods.

Training requirements

The personnel categories requiring dangerous goods awareness training is:

- The person checking in the passengers, luggage and cargo that also makes the passenger and cargo manifest.
- The HLO and the helideck personnel involved in loading and unloading of passengers and cargo on the helicopters offshore

This training has to be performed every 24 months and requires a separate test. Records of this have to be filed and maintained on board the vessel /installation for each person.

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Dangerous Goods requirements

If a capacity of transportation of dangerous goods is required from an offshore installation/vessel the IATA regulations require a full IATA Dangerous Goods course for the nominated person accepting the cargo. This course has to be repeated every 24 months. Records of this have to be available on the vessel/installation.

If dangerous goods are to be transported in helicopters from offshore destinations the installation/vessel has to have the following available:

- Nominated Person (Shipper and Packer)
- Latest version of IATA DGR Goods Regulations available
- Shippers declaration forms
- Checklists – Radioactive and None Radioactive
- NOTOC forms
- UN Specification packages
- Inner packages matching UN Spec. markings
- Limited Quantity Packages
- Absorbent and Cushioning material
- Dangerous Goods Labels
- Provision of spill kits

4.2.7 The transport of fish

In order to avoid corrosion and/or other damage to baggage, the following restrictions will apply to the transport of fish:

- The fish must be packed in watertight containers, or,
- The fish must be frozen and packed in plastic or a similar material in such a manner as to avoid damage in the event of thawing.

4.2.8 Personal Locator Beacon (PLB)

Flights where passengers are equipped with personal Locator Beacons (PLB) to be left behind in the helicopter after the flight, the HLO is responsible for departing passengers not taking their PLB's with them.

If any PLB's are left on the installation, information of this incident must be communicated to the heliport which has the daily supervision of the PLB's.

4.3 Communications

This section of the manual contains procedures and guidelines for communication between the helicopter deck crew and the helicopter pilots. See enclosure I for guidance to radiocommunications.

4.3.1 Language

Normally all aeronautical communication is in English. It may, however, be more practical to communicate in Norwegian if the English capabilities are limited and both parties speak Norwegian.

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4.3.2 Responsibilities

The HLO will inform when the helideck is cleared for landing. He will also provide safety related information, e.g. that the helideck may not be used due to an alarm, that the undercarriage is not lowered, loose articles that may have struck the rotor, oil or fuel leaks or faults with the helicopter (loose covers etc).

The HLO may not assume control of the air space or exercise air traffic control over the helicopter traffic.

4.3.3 Establishing radio communications

Prior to establishing radio communications one should ensure that:

- The correct radio frequency is being used.
- Listen first so as not to interrupt ongoing communications.
- Be aware of what one wants to say

If a radio station hears a call without being able to identify the call sign of the station being called, it shall not answer until the call sign has been repeated and understood. If a station receives a call without being able to make out the identity of the caller, the following terminology shall be used:

“Station calling, this is Statfjord B HLO, say again your call sign”.

4.3.4 The call sign of the helicopter

The call sign of the helicopter may be the flight number of the helicopter in question (e.g. Helibus 012) or the registration letters of the helicopter, usually abbreviated to the first and the last two letters (e.g. LN-OMN = LMN).

4.3.5 Radio failure

Even though modern radio equipment is reliable, radio failure between the helicopter and the helicopter deck crew cannot be excluded.

In practice, a suspected loss of contact will arise when a helicopter fails to respond when called or if the frequency becomes silent.

In the event of a suspected radio failure, contact should be made with another member of the helicopter deck crew or the radio operator so that the helicopter pilot can receive information.

As an exception, hand signals may be used to indicate that the helicopter deck is clear for landing. (**Hand signal OK**)

4.3.6 Phraseology

During radio communication between the helicopter and a ground station certain words and expressions, known as phraseology, are used in order to ease understanding. The most possible use of standard phraseology is recommended. Enclosure D contains a list of standard English expressions with their Norwegian equivalent.

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4.3.7 Frequencies

The **information frequency** for helicopter services is used for

- Deck clearance
- Wind direction and velocity
- Any other information of importance to flight safety

Where two frequencies are in operation all other communication shall take place on the **Logistics frequency** (on another radio).

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5 Aviation fuel Introduction

5.1 General

The contents of these guidelines cover the minimum requirements regarding the use of equipment for supplying fuel to the helicopter. It is important that the helideck crew is familiar with these guidelines, and the relevant safety requirements.

5.2 Purpose

This document contains operational guidelines and includes the control and handling of the product aviation fuel Jet A – 1.

5.3 Personnel duties

It is the responsibility of each individual installation to establish a preventative maintenance programme relating to the unit with regard to safety and environment, and ensuring that such measures are in accordance with current regulations.

The most important duties for personnel involved in operating the units are to always ensure that the correct fuel quality is delivered, that the product is free from water and pollutant solids, and that refuelling is carried out in a safe, secure and efficient manner. The HLO has the day to day supervision of the refuelling operations. He shall ensure that all work is conducted in a safe manner and in accordance with the relevant procedures and instructions. All inspections relating to operations shall be logged.

5.4 Sampling and controls

5.4.1 General

Jet A – 1 shall be subject to quality assurance controls from the refinery to consumption. All quality assurance shall be controllable. This must be conducted in accordance with the relevant guidelines.

All samples must be taken by competent personnel using proper procedures and equipment. It is important that persons suffering from colour blindness do not carry out water detector tests. This is to ensure that that samples that are taken give a correct picture of the product being controlled. All sampling must be logged.

5.4.2 Water

Water in the fuel may be found in two forms:

- As dispersed water, i.a. fine/small droplets that have separated from the fuel. The dispersed water may be removed/separated from the fuel in the filter separator. Any remaining water will be absorbed in the filter monitor.
- As water molecules, i.a. loosely attached to the fuel molecules.

Water attached to the molecules in this manner cannot be removed by these methods.

Even though it occurs in only minute quantities it is nevertheless of no little

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importance for the fuel.

Such fine dispersion may be generated during the water and the fuel's path through a pump or a micro filter.

A visual check will normally disclose dispersed water. However, experience has shown that with the turbine fuels used by aircraft, there may be borderline cases where the human eye cannot be trusted.

It is against this background that the "Shell Water Detector" has been developed. This will give a positive indication of dispersed water with a concentration of 30 parts per million (30 ppm). The capsules may also show a slight change in their appearance in a concentration as low as 5 parts per million (5 ppm).

5.4.3 Visual controls

In order for the fuel samples to be accepted, the fuel must be of the correct colour, visibly clear and transparent and free from particles and dispersed water at normal temperatures.

The colour of Jet A – 1 varies from a watery white to a straw yellow. Refer also to the chapter on "Visual Check". Water that has not dispersed will appear as drops on the inner walls of the sampling glass or as water at the bottom of the glass. This may also "fog" the sample/make it opaque.

Particles and other visual pollution will generally consist of rust, sand or dust, either mixed with the fuel or as sediment at the bottom of the glass.

When using the permanently installed sampling glasses, by discharging the sampled fuel onto the outer rim of the glass, an automatic cyclone movement is achieved. In this manner particles and larger water droplets are gathered at the bottom of the glass.

It is therefore important that samples that are taken from the portable tanks are given a powerful rotation in order to achieve such a cyclone.

Satisfactory result.

When none of the above mentioned are visible and the sample is clear and sediment free.

Unsatisfactory result

The sample is not clear and transparent; water or pollution is present.

If a sample contains sediment and/or free water:

- Further samples must be taken until the fuel is clear and free from water (clear and bright)
- If the sample contains finely dispersed water, a settling time of 1 hour per meter tank depth shall be allowed. After which a new purity test must be carried out.

This process must continue until the samples are completely free from water and/or sediment (clear and bright, satisfactory test results).

5.5 Testing and controls

Shell's water detector should be used to check the samples taken from the helicopter fuel (Jet A –1).

Should a detector change colour, it is most important that the procedures described in the following are used to remove the pollution from the fuel. The detector is comprised of the following components.

- An unbreakable injection syringe of 5 ml.
- A plastic detector capsule containing water sensitive paper.

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5.5.1 Storing Shell's Water Detectors

The capsule lid should be screwed on as soon as possible after the detector has been removed from the container. This is because of the possible risk of discolouring the paper due to air humidity.

As a consequence, detectors should not be left lying around, or left loose in the pockets of overalls, clothes etc.

The maximum storage time for a detection capsule is nine (9) months from the date of production.

- The expiry date will be stamped on one side of the storage box.
- The expiry date will also be stamped on each capsule; this must be respected.

Unused capsules should be stored indoors under dry conditions until they are to be used.

5.5.2 Procedure for using the Water Detector Test

Check that the expiry date has not been exceeded (to be found on the box/container). Prepare a sample of at least 3,5 litres in a clean, clear glass.

The sample must be powerfully rotated until a cyclone effect is generated in the glass. By using this method particles will accumulate at the bottom of the glass and any water particles will be crushed into the fuel. This takes place automatically in the enclosed sampling glasses.

Mount the detector on the syringe and immediately submerge both into the sample. Withdrawn the plunger until the fuel reaches the 5 ml mark.

Make sure that the plunger is not withdrawn before the syringe is submerged in the liquid.

If the plunger is withdrawn when in the open air, humidity will create an indication in the detector. This will result in a faulty reading.

Any possible water droplets in the fuel will be absorbed onto the paper fibres, releasing and spreading the colouring. In this manner a distinct colour change will occur.

If this change in colour takes place it means that the fuel is polluted by water and must consequently not be used. The part of the paper that is protected by plastic will remain unaffected. Any colour change between the inner and outer (wet) part or measured area, is a positive indication of the presence of finely dispersed water.

A generally light pastel colouring over the whole centre of the detector, or no colour at all can be approved. A light yellow pastel colouring with darker specks or spots indicates that there are still some drops of water remaining suspended in the fuel, which may be above the permitted maximum concentration of 30 parts per million (30 ppm).

Further precipitation, discharging and separation is required to remove this water so that the concentration reaches below the level of 30 parts per million. Large and darker specks, or a generally darker colour in the centre of the detector, will of course indicate the presence of even more water in the fuel. This must be removed before it is safe for the helicopter to use the fuel.

When testing just before and after refuelling the helicopter, let the pilot wet the detector after the test has been completed to see that the colour changes to green, and to ensure that the detector was not defect.

On other occasions, apart from refuelling:

- Wet the detector, even though the test has been concluded, so as to get a

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confirmation of the change of colour.

- A detector must be used only once and thereafter discarded.

5.5.3 Drainage, Sampling and Checking

Drainage and product sampling – routines at the plant

In order to check that the storage tanks and delivery equipment are particle and water free drainage samples must be taken on a regular basis.

The equipment must be drained for water and particles at the following intervals:

- Daily from storage tank, filter separator and filter monitor before the day's first delivery.
- Before and after each delivery.
- After heavy rain and storms.

Drainage must be carried out with a full flow of liquid from the tank sump, the filter water separator and from the inlet side of the filter monitor. The liquid must be drained into clean clear glass jars of at least 3,5 litres for Visual Check. If the sample does not give a satisfactory result by Visual Check, the plant must be drained and new samples taken until a satisfactory Visual Check is achieved

If unusually large amounts of free water or particles are found, or if it is not possible to achieve a satisfactory Visual Check, then the system must be taken out of service.

Investigations must be carried out immediately to find the cause of the pollution.

5.5.4 Visual Check

The following subsections are guidelines regarding the visual checking of fuel samples

- Colour: Jet fuel may vary in colour from completely clear (water colour) to a straw yellow colour.
- Water: Free water will normally show as drops on the sides or at the bottom of the sample jar (free floating). It may also occur as a misty cloud in the fuel. (Emulsification).
- Particles: Consists mainly of small specks of rust, sand, dust or scale from hoses and equipment; settle at the bottom of the sample jar.
- Clear and bright: This expression is independent of the natural colour of the fuel. Clear means that there is no presence of sediments or emulsion. Shiny refers to the shiny appearance of the fuel when it is completely clean. If water or particles are discovered, new samples must be taken until the test is clear and bright.
- Control Check: This check consists of a Visual Check and the specific weight (density) of the fuel. This check is made to ensure that the fuel has the proper quality and has not degraded or been polluted during storage. The results of this test are compared to the values listed on the certificate. When the actual weight has been corrected to standard (15° C) the difference must be no more than 0.003 kg/l. If the difference is greater, the product must be quarantined and not supplied until the reason for the deviation has been clarified and new approval given.

If the discovered deviation is in the form of a technical problem relating to the unit, competent personnel must be summoned.

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5.5.5 Sampling and inspection

Daily (every morning), to be carried out by the HLO

- Take a 3,5litre sample from the filter separator and monitor with the system pressurised.
- Take a 3,5litre sample from the tank currently in use.
- All samples to be checked with the Shell Water Detector
- The accepted sample from the storage tank must be kept for 24 hours: The sample must not be exposed to sunlight. If two tanks are being used during the course of one day then the samples from both tanks must be kept for 24 hours. The samples must be labelled.
- Carry out a visual inspection of the equipment to check for leaks and damage..
- When transferring fuel, read off and note in the helicopter tank log the monitor's pressure difference.
- Earth cables: Daily inspection for good mechanical contact with the unit and for possible damage.

All tests and inspections must be logged.

Weekly checks and inspections, to be carried out by the HLO

- If the system has been out of operation for more than a week, in addition to the other samples, a 3,5litre sample must be taken from the filling nozzle.
- In order to distribute wear and tear on pumps A and B a weekly alternation of the pump in use is recommended.
- Take a 3,5litre sample (or until the sample is acceptable) from portable tanks that are in storage.
- Drain the air separator collector glass.
- When pumping fuel, read off the pressure difference and note the result in the weekly log for pressure difference in the separator and monitor (See enclosure). If the maximum pressure difference for the filter separator or possibly the monitor is exceeded, the filter elements must be replaced (for the filter separator only step 1). For the filter separator, the maximum pressure difference is 15 psi, and for the monitor 22 psi.
- Inspect all earth cables (for portable tanks, supply unit, and the filling nozzles). If there is any fault or suspected fault, maintenance personnel must be summoned. The delivery unit must not be used if there is any fault or suspected fault with the unit's earthing system.
- Once a week the differential pressure for the separator and the monitor must be read whilst pumping at the selected delivery volumes. The results shall be logged.

Monthly checks and inspections, to be carried out by the HLO

- Check the delivery hose for damage and log the result, ref item 5.8 and the enclosures.
- Carry out function testing of the piston type differential pressure manometer for correct operation. This is done by opening the three-way valve connected to the meter. It is only necessary to check that the piston has free movement throughout its whole length, and ensure visually that it properly returns to its initial adjustment. The result shall be logged.
- Check the hose end filters in the pressure hose connectors and the filling nozzles.

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During each inspection of the filter strainer (monthly) the hose in question must be pressurized for at least one minute.

Checks and inspections with longer intervals than those listed above are part of the installations individual maintenance systems.

5.5.5 Returning products to the unit.

Clean products containing no water that are accumulated during draining and sampling may be returned to a slop tank. The product in the slop tank shall be allowed to settle and be drained free of water and particles before being transferred to a product tank.

5.5.6 Sampling when delivering to the helicopter

- A 3,5litre sample shall be taken from the filter monitor or the filling nozzle before delivery. The sample must be checked visually, including testing with the water detector. Any water must be drained off and new samples taken until a satisfactory water detector test has been achieved.
- A 3,5litre sample shall be taken from the filling nozzle or from the inside of the filter monitor immediately after delivery has been completed. This is in order to confirm the quality and to carry out a visual check with a water detector.

If there are any indications of water, or any marked change in colour in the water detector, a new sample must be taken. The pilot and the airline company must be informed immediately. No further fuel must be delivered until the cause has been found and rectified.

5.6 Specific weight measuring (density measuring)

According to the specifications the specific weight (density) of Jet A – 1 lies in the area of 0.775 – 0.840 kg/litre. The specific weight (density) of the product must be checked when received offshore. The specific weight is checked by the use of a hydrometer and a thermometer (may be built in as part of the hydrometer). The test must be conducted in a well-lit area, protected from rain and wind.

The hydrometer shall be sunken slowly and carefully into the fuel. This is to avoid breakage, or it becoming wet above the flotation level. Care must be taken to ensure that air bubbles do not attach themselves to the submersed surface. The hydrometer must float freely.

The hydrometer must float for some three to four minutes so that its temperature and movement are stabilised. Then carefully push the hydrometer down 2 marks on the scale and release. Once the hydrometer has re-stabilised, read off the specific weight (density).

The fuel will creep slightly up along the thermometer so that the level indicated on the scale will be above the real fuel level.

Look along the surface of the fuel and read off at the lowest indicated level. Read off to the nearest 0.001 kg/l and log the products specific weight.

Shake the hydrometer and take two or three more readings as confirmation that they are correct.

Thereafter read the temperature. Note both temperature and specific weight (density) as direct readings from the hydrometer.

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Use the noted temperature and specific weight (density) and correct them to 15 ° C by using the conversion table for density (ASTM-IP table 53), or by using the conversion unit for fuel density (the plastic circular sliding converter Aristo 60 208 – Germany).

Note the specific weight corrected to 15° C. NB As sliding converters becomes worn they will show faulty readings. If such instruments are used they must be regularly checked for wear.

The specific weight (density) corrected to 15° C must be within +/- 0.003 kg/litre of the specific weight, corrected to 15° C, which is to be found on the upper part of the transport certificate for the aviation fuel.

If an electronic Density Meter are being used the manufacturers user manual must be adhered to.

If the specific weight is not within the limits, then the guidelines for faulty fuel must be followed, and the fuel may be sent in return.

5.7 Basic requirements for laboratory samples

Samples that are to be certified by a laboratory must be taken from an outlet having direct access to the space where the liquid is stored.

Before sampling the equipment must be rinsed thoroughly, and washed at least three times in the product from which the samples are being taken. The containers must be properly dried before use.

The containers must not be filled completely. Some 5% of the volume must remain in order to allow the liquid to expand. Approved containers must be used; these should be labelled and preferably sealed.

The containers must be sealed and labelled immediately after filling. The label shall contain the following information:

- Date and time:
- Sample taken by (signature)
- Installation/vessel
- Tank no.
- Batch no.

Documentation for all samples shall be logged. A copy of the transport certificate shall be attached for each product.

5.7.1 Containers

- **Containers for laboratory samples**

Glass, metal or approved plastic containers for laboratory or duplicate tests must be either new or approved by the laboratory and absolutely clean. (Refer to ASTM D 4306 for suitable containers). Metal containers must be approved and preferably have epoxy coated linings. Even though they may be new, all containers must be rinsed at least three times in the product from which the samples are being taken.

- **Containers for visual sampling**

Clean, transparent containers with a capacity of a minimum of 3,5 litres and a wide opening that will accept a threaded lid, must be used for sampling. If a bucket is used for draining, it must be of stainless steel, or perhaps white enamel, and have approved earthing.

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5.8 Hoses for aviation fuel – approval and control

Each hose must have a permanent identification, and a log for inspection and controls. This must contain the date and year of manufacture, the date and year of when the hose was taken into use, and information relating to the results of maintenance and inspection.

The maximum storage time is two years. The maximum lifetime for hoses is 8 years, subject to annual pressure testing and inspection in accordance with API 1529/BS-EN 1361. Both periods are to be calculated from the date of production. If the hose is not pressure tested annually, the maximum lifetime is set to 2 years.

Prior to use, new hoses shall be flushed in accordance with API 1529/BS-EN 1361, and then pressure tested. Products that have been used for flushing are to be returned to a slop tank that is either being filled or settling.

All hoses used for supplying fuel shall be subject to routine inspections and checks.

Hoses are to be kept under observation during refuelling. If any weaknesses or faults are discovered, delivery through the hose must be stopped and the hose replaced.

Inspection of the hoses may take place in the following manner: Pull the hose out all the way and apply full pumping or operational pressure with the delivery connector shut. When the hose is under pressure, check for exterior damage, leaks or other signs of weaknesses. It is recommended that when inspecting a long hose (under full pressure) a vertical “loop” is formed and that the loop is then rolled along the length of the hose. Special attention must be paid to any indication that the hose connections are beginning to loosen.

With the hose fully extended, release the pressure and inspect for soft spots. Special attention must be paid to the part of the hose that is about 45 cm from the connectors as this area has a special tendency to weaken. This part must be checked for faults by applying pressure around the area in order to discover soft spots, bubbles etc.

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5.9 Pressure connectors

Whenever refuelling, all connectors must be checked for leaks. Leaking connectors must be taken out of use. Repairs and adjustments shall be logged and carried out by authorised personnel.

5.10 Filling nozzles

A general inspection of the filling nozzle shall be carried out at each delivery. At any sign of a leak the filling nozzle must be taken out of use. Repairs and adjustments must be logged.

5.11 Receiving fuel and checking the delivery

Before the tanks are filled onshore, they are inspected and approved and a tank inspection certificate is issued by the fuel distributor. The HLO must check that the labelling and traceability between the documents and the tank are in agreement. Check that the transport certificate for aviation fuel contains the following elements:

- Type, Amount, Batch no., Date, Tank serial number, Specific weight (density), Verification of being free from solid particles and water, the inspector's signature.

The following must be checked when receiving fuel:

- Check that the seals on the manhole, inspection hatches and outlet are unbroken. Also check that all dust covers are in place and intact.
- Check that the tank cradle/tank have their respective approvals. This may be read off the tank data plate.
- Check for damage to hatches and valves. Make a special check of protective hatches and their packing rings.
- Check that the seals are intact and that the type of tank is labelled.

5.11.1 Settling time

- | | |
|---|-----------------------------|
| • 600 USG (2300 litre) tank: | 1,5 hour settling time |
| • 1000 USG (3800 litre) tank: | 2 hours settling time |
| • Settling time stationary storage tank | 1 hour per meter fuel depth |

If the sample contains sediments or free water, further 4 litre samples must be taken until the samples no longer contain sediments or free water. The following tests shall be conducted:

- A rotation test (powerfully rotate the sample before the visual check)
- Clear and bright test (visual check)
- Shell Water Detection test.

The criteria for accepting the sample are that it:

- *Passes the clear and bright test*
- *Is free of water*
- *Is free of pollutants*

If one or more of the criteria are not met, a further settling time of one hour per meter

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tank depth is allowed. Thereafter, all the specified tests must be repeated. The process shall be repeated until a satisfactory result is achieved, but should a satisfactory result not have been achieved after the fourth settling period, the fuel will not be approved.

The final test results (the results from the last settling periods) should be noted and the receiver's copy of the transport certificate signed. Both a receipt for the fuel and the results of the tests should be noted on the transport certificate for aviation fuel.

Helicopter fuel should not be used until the fore mentioned procedures have been completed and satisfactory test results have been achieved.

5.11.2 Non-approved fuel

Before fuel that does not meet the requirements regarding purity, specific weight or water detection, is returned it should be given a new settling time before draining and testing the fuel at least three more times.

The equipment/instruments should be checked (a new set should be tried if available) and it should be ensured that the tests are conducted according to the procedures. Should the test results still be uncertain, another person should conduct the tests by themselves.

Should this test confirm the unsatisfactory or uncertain results, a superior must be informed.

If the fuel and/or the tank cradle do not meet the specified standards, the following should be noted at the bottom of the aviation fuel transport certificate.

- Details regarding the fuel, and /or deficiencies with the tank cradle.
- The name of the installation
- The date
- The signature of the reporter.

The completed original of the certificate should then be returned to the cartridge on the tank cradle.

The label should be placed on the transport tank as is shown below and the following completed on the cargo manifest:

- Non-approved fuel
- From: (the name of the installation).
- To: (to be completed).

5.11.3 Using fuel directly from a transport or storage tank.

Depending on how the plants are designed on the different installations, fuel deliveries may either be transferred from the transport tank to fixed (stationary) tanks, or remain stored in the transport tank by being coupled to the refuelling system.

5.11.4 Fuel in the transport tank

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If the transport tank is used for storage an earth cable must be attached to the tank cradle. This must also be attached during the transfer of the contents of the tank to permanent (stationary) storage tanks. The tank is coupled to the pump's manifold system with the aid of a pliable/flexible hose (corrugated steel pipe) that is connected to the coupling on the transport tank. Only one tank at a time shall be connected to the pump's manifold system.

5.11.5 Transferring fuel between the transport and the storage tank

The following tests must be conducted to verify the quality of the fuel when transferring fuel from the transport tank frame to the storage tank, and/or during the transfer of fuel between different storage tanks:

- Visual check
- Water detector test, on a 3,5litre sample taken from the tank frame/tanks drainage point.

Make sure that the tank that is to receive the fuel has sufficient volume to accept the transferred fuel. When transferring from the transport tank:

- Connect the earth cable to the transfer tank
- Connect the transfer hose and open the tank valve
- Start to transfer the fuel, the fuel must be lead and not allowed to fall freely into the tank.
- When the transfer is completed, disconnect the dry connection (hose) and the earth cable.

After the fuel has been transferred:

Conduct a visual check. Allow for a settling time of one hour per meter of fuel in the tank. Take a 3,5litre sample from the tank's drainage point and perform a water detector test. If the sample contains sediments and/or free water, new samples must be taken until the sample is free from sediments/free water. The process must be repeated until satisfactory results are achieved. If the test is still not satisfactory after the fourth settling period, investigations/corrective measures shall be initiated.

5.11.6 Labelling and changing tanks

In order to avoid confusion regarding which tank is in use, signs shall be posted showing the status of the tank(s). The following text shall be used:

- This tank was received on, and has been stored since _____ (date)
- The tank is in use
- The tank is settling
- The tank is empty

NB! Also applies to tanks used for storage/delivery

5.11.7 Old fuel stores

As far as possible super numerous stocks of fuel should not be stored offshore. Stocks should be depleted if longer periods without replenishment are expected.

If fuel has been stored for more than six months after the stated filling date, a four litre drainage sample should be taken in a special container. This should be sent to an approved laboratory for quality control. Should the test show that the fuel meets the required specifications for use, it may then be used in the normal manner.

Old fuel may not be used until the test results are available and approval has been received from the fuel supplier/laboratory.

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On the condition that the results are satisfactory the stored fuel may be used, but it must be re-tested every third month.

Fuel that fails to gain approval during these tests shall be returned to shore as "Non-approved fuel", see Item 5.11.2

5.11.8 Returning transport tanks

Outlets must be sealed before transport tanks are returned to shore. The protective cover over the hose connector must also be checked to ensure that it is in place.

5.12 Fuel delivery/refueling

5.12.1 Refueling crew

Refueling shall be carried out by competent personnel who are well trained in procedures and operating the refueling system. The crew shall be sufficient to ensure a safe operation, and to be able to react properly in the event of an emergency. The personnel shall be familiar with the location and operation of the emergency stop buttons. The requirements relating to personnel competence are to be found in the Norwegian Oil and Gas Guidelines.

The step-by-step duty of each individual member of the helideck crew during take off and landing is described in enclosure K.

5.12.2 Earthing between the helicopter and the refueling equipment

The helicopter, the supply unit, the filling nozzle/pressure connector shall be connected in order to lead electricity during the whole of the refueling operation. This is to ensure that electrical potential (difference in current) does not occur between the units.

Earthing between the helicopter and the supply unit shall be completed before any hose is connected to the helicopter or any tank cover opened. The earthing must remain connected until all hoses have been disconnected and the tank cover replaced.

5.12.3 Refueling procedures (General)

- Refueling during local heavy thunderstorms is forbidden.
- Hoses must be removed in such a manner that they are not damaged. Twisting or bending the hoses should be avoided. Pressure connectors or filling nozzles shall not be dragged along the ground. Dust caps must be in place as long as pressure connectors/filling nozzles are not in use.
- During refueling the delivery unit must be checked for leaks, the differential pressure of the filter monitors observed and logged, and the other instruments read off and otherwise kept under observation.
- Spilt fuel is both a fire hazard and a danger to the environment. Hot helicopter engines may be a source of ignition and extra care must be taken during

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refueling. Should any spillage occur, all refueling must be stopped and the necessary measures implemented according to local requirements/routines.

5.12.4 Refueling with the helicopter's engines running ("hot" refueling)

Refueling the helicopter with the engines running (hot refueling) is an operation that demands very strict safety requirements. The fuel supply delivery station must be manned in order to operate the unit.

5.12.5 Defueling Helicopter

Defueling shall be done with the same personnel and according to the same safety procedures as for fueling.

The HLO shall ensure:

- that all returned fuel is of known quality and type (JET A1)
- logging of returned amount of fuel and where it is returned from
- that returned fuel is settled and drained for free water and particles prior to readying the product for new deliverance

Fuel which is defueled through waterseparator or monitor filter can be delivered without any prior settling and drainage.

5.12.6 Refuelling with Passengers onboard

Refuelling with passengers onboard requires that the Helicopter pilot and HLO/OIM agree, and to follow standard procedures with addition of the following:

- Pilot and HLO shall be present, and in full control of the operation at all times.
- All passengers must be briefed on the operation before fuelling commence.
- Passengers must have seatbelts undone during refuelling procedures.
- Doors on the refuelling side closed.
- Doors on non refuelling side open.
- Emergency egress route planned, clear and known to all involved in the operation.
- Helicopter Operator procedure in place and known to Helideck crew.
- Deck procedure known to helicopter crew.

5.13 Review over required documentation

The results of all inspections and tests shall be logged on updated documents that are readily available. These shall be kept for a minimum of at least one year. As a minimum they shall contain:

5.13.1 Documentation – Quality control

Helicopter refueling log. This form contains the requirements relating to daily sampling/inspection.

Log for filter and differential pressure and transport log for helicopter fuel is also used.

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5.13.2 Documentation – Maintenance

Logbook in which all work carried out on every unit of the equipment is logged.

Log for testing of pressure tanks connectors and filling nozzles.

Log for the inspection and testing of hoses.

Log for the calibration of volume meter.

Log for the calibration of pressure manometer.

Log for tank inspection and cleaning.

Log for filter equipment – inspection and maintenance

Log for the filter in the pistol grip nozzle – inspection and replacement.

Documentation relating to the execution of these tasks shall normally be found in the installation's preventive maintenance programme. See enclosure C for relevant forms.

5.13.3 Signature/Filing time

The person doing the job must sign all documentation. Documents relating to daily inspection shall be kept on file for at least 3 months. All documents relating to weekly and monthly inspections shall be kept on file for at least 1 year. Documents relating to inspections that have longer intervals, or relate to non-routine incidents, shall be kept for at least 3 years.

5.13.4 Change of location

The remaining fuel quantity onboard shall be logged when the rig is moving to another helicopterbase and/or changing helicopteroperator. Registered amounts are to be reported in writing to the owner of the fuel as soon as possible and at least 5 days after arrival new location.

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6 Special procedures and operations

This chapter covers the special procedures/operations that are used on certain installations, types of helicopter, under special conditions etc. For this reason these are not covered elsewhere in the manual.

6.1 Emergency situations

Actions that are taken must be in compliance with the installation's emergency procedures.

6.1.1 Basic principles.

Teamwork

The crew of the helideck must work together as a team when dealing with emergency situations.

Discuss how to deal with the different emergency situations on the helideck and conduct exercises on the helideck in handling emergency situations. This is to develop quick counter measures, forms of cooperation and efficient actions. Otherwise refer to Enclosure E, Emergency Training.

Reactions in emergency situations

Common sense shall be used when reacting to emergency situations.

Normal train of action:

- Evaluation of the extent of the emergency situation, securing own escape route.
- Calling for assistance/sounding the alarm.

Dealing with the situation by:

- Localising the source
- Extinguishing/eliminating
- Rescuing personnel/reducing risk
- Preventing spreading

Monitoring to prevent re-ignition/repetition.

6.1.2 Fire in the helicopter/on the helicopter deck

First actions

- Immediately stop any refueling that is taking place.
- Activate the fixed fire fighting equipment.
- Sound the alarm
- Don fire protection gear. (The fireguard is already wearing his.)
- Determine the source of the fire(s)

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Areas of responsibility

HLO:	Alerting/Notification. Confers with pilot and coordinates actions. If the type of fire allows, confer with pilot before using fire fighting equipment.
Heliguard:	Works with fireguard and HLO in fighting fire and reducing risk
Fireguard:	Operates the fire fighting equipment.

Fire Teams

In extensive fires the fire teams on the installation will be involved in extinguishing the fire, and will take over the responsibility from the helideck crew.

Rescue

In some cases it will be possible to save the helicopter crew/passengers before the fire becomes too large.

If rescue appears to be possible then this should be attempted, but the fire fighting equipment must be used to cover personnel involved in the rescue operation.

Should it be necessary to enter the helicopter cabin in order to save personnel one must:

- Use smoke diving equipment
- Keep as low as possible when entering the cabin
- Stay below smoke and gasses. It is here the largest amounts of oxygen are to be found.

Fire watch

When the fire has been extinguished a fire watch should be maintained at the site so as to avoid re-ignition. The carpet of foam should also be maintained to the extent necessary.

6.1.3 Crash on the helicopter deck

The characteristics of a helicopter crash.

Due to the fact that a helicopter has no wings, the engine(s) and the fuel tanks are positioned in the immediate vicinity of the cabin.

In the event of a crash this means that:

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There is a possibility that parts from the rotor blades may be slung around.

It is less likely that the helicopter will remain standing (in a vertical position).

It is easier to drag hoses around a helicopter, and there are far less sheltered areas beneath the fuselage.

The shorter distance to the secondary fire fighting equipment increases the advantage/effects. As the cabin, engines and fuel tanks are so close to each other, rapid intervention may be decisive.

If a helicopter crashes on the helideck the fireguard shall:

- Start the fire pumps/sound the alarm
- Cover the helideck with foam
- Extinguish any fire.
- Maintain a sharp lookout for fire. This is especially with regard to spilt fuel that may run down to the lower decks of the installation.

Rescuing passengers and pilots

The helicopters doors and hatches are of a relatively simple construction and there is little probability of them jamming. Should this be the case then they must be forced open.

Should it be necessary to use more force to enter the helicopter, cutting must only take place at specific points e.g. emergency exits and windows.

The rescue equipment listed in Chapter 3 is to be used.

Should a helicopter be lying on its side, those onboard must be supported when the seat belts are released.

NB! The helideck crew must have detailed knowledge of the type of helicopter, as described in emergency procedures in Enclosure F.

Choking/stopping the engines shall be carried out when:

- The helicopter is in a normal position and the pilots are put out of action.
- The engines and the rotors are still running.
- Stop the engines with the helicopter's emergency stop handle.
- Be aware that the rotor blades move closer to the deck as rotation speed drops.
This may constitute a major hazard to personnel on the deck.
Do not allow personnel to leave the helicopter until the rotors have stopped.

6.1.4 Crash into the sea

Alerting

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Make sure that the radio operator is notified.

The radio operator/control room will carry out further notification in accordance with the installations internal procedures.

The helideck crew shall act in accordance with the installation's emergency procedures manual.

6.1.5 Emergency landing with prior notification

Preparations

If warning has been given that a helicopter is experiencing problems and wishes to land on the helicopter deck, preparations must be made to deal with the situation.

Ensure that the radio operator /control room is informed and that the proper alarm signals have been activated.

The emergency teams are mustered in accordance with the installation's internal procedures.

All of the crew who man the helideck must don fire protection gear.

Put on smoke diving apparatus.

Dry powder equipment

Prepare the fixed powder extinguishing hose for immediate use (See Chapter 3). Stand in a sheltered area with this equipment at the ready.

6.2 Helicopter deck "Safedeck"

6.2.1 General description

Helicopter decks of the "Safedeck" type have been specially designed to quickly lay a complete layer of foam over the whole surface of the helicopter deck in the event of a fire in the helicopter or a crash on the helicopter deck. The deck may also have a "pop-spray" system.

6.3 Embarking/disembarking from the helicopter in strong wind

6.3.1 General information

The upper limit for ordinary passenger transport is 60 knots wind including gusts

The wind on the helicopter deck may deviate from the given wind measurements.

Due to the surroundings around the helideck upwind or downwind and /or funnel effects may occur together with turbulence. This changes the wind fields radically. Such local conditions will differ from installation to installation and may also vary with the wind direction.

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6.3.2 Risk reducing measures

When a report has been received forecasting winds of more than 50 knots, each installation shall attempt to reduce the passengers exposure to the wind.

Such appropriate methods may include:

- A careful evaluation when selecting the exit/access to the helideck that is least exposed to the wind.
- The heliguard and fireguard assisting passengers to/from the helicopter.
- Passengers carrying only one piece of luggage so as to have one hand free.
- The heliguard and the fireguard handling all luggages on the helicopter deck.

In such cases it may be necessary to strengthen the manning of the helicopter deck. The HLO must continuously evaluate the conditions on the helicopter deck and, after conferring with the pilot, decide how best to ensure the safety of the passengers. If the HLO decides that the safety of the passengers can no longer be upheld in a sound and proper manner, he must stop helicopter operations on the installation. The Installation Manager, or similar, must be duly informed.

6.4 Refuelling in strong winds

In special situations/emergencies it may be required to refuel the helicopter with wind forces in excess of 60 knots. In such cases, special precautions must be taken.

The pilot will brief the helideck crew regarding any special procedures/ to be followed or precautions to be taken.

The HLO should call upon a qualified person when increasing the manning of the helideck.

6.5 Flights to installations that are normally unmanned

6.5.1 General information

An unmanned installation is in this context an installation with a helideck operational according to regulations, but has no personell onboard when the helicopter lands or takes off from the installation.

Flights to an unmanned installation should be limited to as few as possible and preferably be executed in daylight.

Transit passengers are not allowed in the helicopter.

If there are persons onboard the installation, crewing and operations shall be as for a manned installation. Exempted is when a helicopter returns empty to collect a group who has previously been offloaded at the same installation.

When flying to unmanned installations the helideck crew shall consist of at least two qualified heliguards. One of these will become the HLO , the other the Fireguard.

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Both shall have documented knowledge of the installations helideck and equipment.

Both (the HLO and the Fireguard) shall be wearing approved survival suits during transit to/from the unmanned installation. At the latest, the Fireguard shall put on firehelmet and gloves just before the helicopter approaches the helideck. Both shall disembark the helicopter before any other passengers and take their positions on the helideck.

As is the case with manned installations, control forms and maintenance routines must be available.

If a floating installation movement data (roll, pitch, heave) must be available at the mother-installation according to standard HMS system specifications.

Landing and departure shall be observed from the mother-installation or stby vessel, either visually or by video monitoring of the helideck.

Helideck crew and helicopter shall have radio contact with the mother-installation or stby vessel during the complete helicopteroperation.

If there is any danger of gas on the installation, gas detectors with warning lights shall be in operation. A light should be positioned in the limited obstacle sector (150° sector) and have good visibility at approach and at helideck.

During night flying the perimeter lights, red obstacle lights and the approach lights must be switched on.

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7 Company Specific Procedures

N/A

8 Enclosures

- A hand signals**
 - B helicopter danger zones**
 - C helifuel forms**
 - D phraseology**
 - E emergency training**
 - F1 SuperPuma AS332 & EC225**
 - F2 CHC-HS Sikorsky S-92**
 - F3 NOR Sikorsky S-92**
 - F4 Eurocopter EC155**
 - F5 AgustaWestland AB139**
 - F6 Westland SeaKing**
 - F7 Agusta A109E**
 - G take off and landing**
 - H helicopter shut down**
 - I guidance to radio communications**
 - J offshore refuelling systems**
 - K hot refuelling**
 - L standard helideck monitoring systems**
 - M reporting form ground occurrences**
- Helideck report form. See separate PDF attachment!**

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